

## **New Records of Four Hydroids (Cnidaria, Hydrozoa) in Korea**

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### **ABSTRACT**

Some marine hydroids were collected from the eastern sea of Korea during the period from June 1989 to July 1997. Among the identified species four hydroids: *Bimeria annulata* (Nutting, 1901), *Bougainvilla ramosa* (van Beneden, 1844), *Eudendrium boreale* Yamada, 1954 and *Plumularia undulata* Yamada, 1950 were turned out to be new to the Korean fauna.

Key words: new record, hydroids, Korea

### **INTRODUCTION**

So far that the Korean marine hydroids known by the previous works (Kamita and Sato, 1941; Rho, 1967; 1969; Rho and Chang, 1972; 1974; Rho and Park, 1979; 1980; 1983; 1984; 1986; Park and Rho, 1986; Park, 1988; 1990; 1991; 1992; 1993; 1995; 1997; 1998), are seven subspecies, 130 species of 18 families in two orders.

Some hydroid specimens were collected from off the eastern sea of Korea with fishing nets or scuba divers during the period from June 1989 to July 1997. Among them four hydroids: *Bimeria annulata* (Nutting, 1901), *Bougainvilla ramosa* (van Beneden, 1844), *Eudendrium boreale* Yamada, 1954 and *Plumularia undulata* Yamada, 1950 were turned out to be new to the Korean fauna. The redescrptions and illustrations on the species were given. So the Korean hydroid fauna identified up to date consists of seven subspecies, 134 species of 18 families in two

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orders.

## DESCRIPTION

Order Athecatae 민첩히드라충목

Family Bougainvillidae 보우겐빌히드라과

### 1. *Bimeria annulata* (Nutting, 1901) 고리마디히드라 (신칭) (Fig. 1A-D)

*Garveia annulata* Nutting, 1901, p. 166, pl. 15, figs. 1-2; Fraser, 1911, p. 22; Fraser, 1914, p. 117, pl. III, fig. 6.

*Bimeria annulata*: Torrey, 1902, p. 28, pl. I, figs. 1-3; Hirohito, 1988, p. 92, fig. 32d-g.

**Material examined.** Sokcho harbour, 19 Jul. 1997, J. H. Park.

**Description.** Hydrorhiza branched stolonial and arranged densely. Stem arising from stolon, monosiphonic in common but sometimes polysiphonic composed of 2-3 stems on lower part, unbranched or branched one or two times, smooth throughout or annulated irregularly and reached to below 15 mm. Hydranth formed on apical portion of stem, with 10-11 filiform tentacles and arranged in a whole surrounding conical hypostome. Periderm more or less thick and extending to base of tentacles of hydranth forming pseudohydrotheca. Gonophores arising from hydrorhizae, round oval shaped and with short stalks covered with periderm which expanding to cup-like its terminals.

**Remarks.** The specimens of *Bimeria annulata* from Korea are more or less different from the original one of Nutting (1901) whose stem and branch have the regular and distinct annulations. But Torrey (1902) examined many specimens including the type specimen of Nutting and pointed out that stems are not so annulated as in the figures of Nutting.

**Distribution.** Korea, Japan (Sagami Bay), Pacific coast of North America.

### 2. *Bougainvillia ramosa* (van Beneden, 1844) 분지보우겐빌히드라 (신칭) (Fig. 1E-J)

*Eudendrium ramosum* van Beneden, 1844, p. 56, pl. 4.

*Bougainvillia ramosa*: Hincks, 1868, p. 109, pl. 19, fig. 2; Stechow, 1913, p. 60; Stechow, 1919, p. 26; Stechow, 1925, p. 411; Briggs, 1931, p. 281; Broch, 1933, p. 11; Vervoort, 1946, p. 135, figs. 52a, 53; Yamada, 1959, p. 24; Vannucci and Rees, 1961, p. 82; Millard, 1975, p. 97, fig. 33E-H; Hirohito, 1988, p. 97, figs. 34b-f.

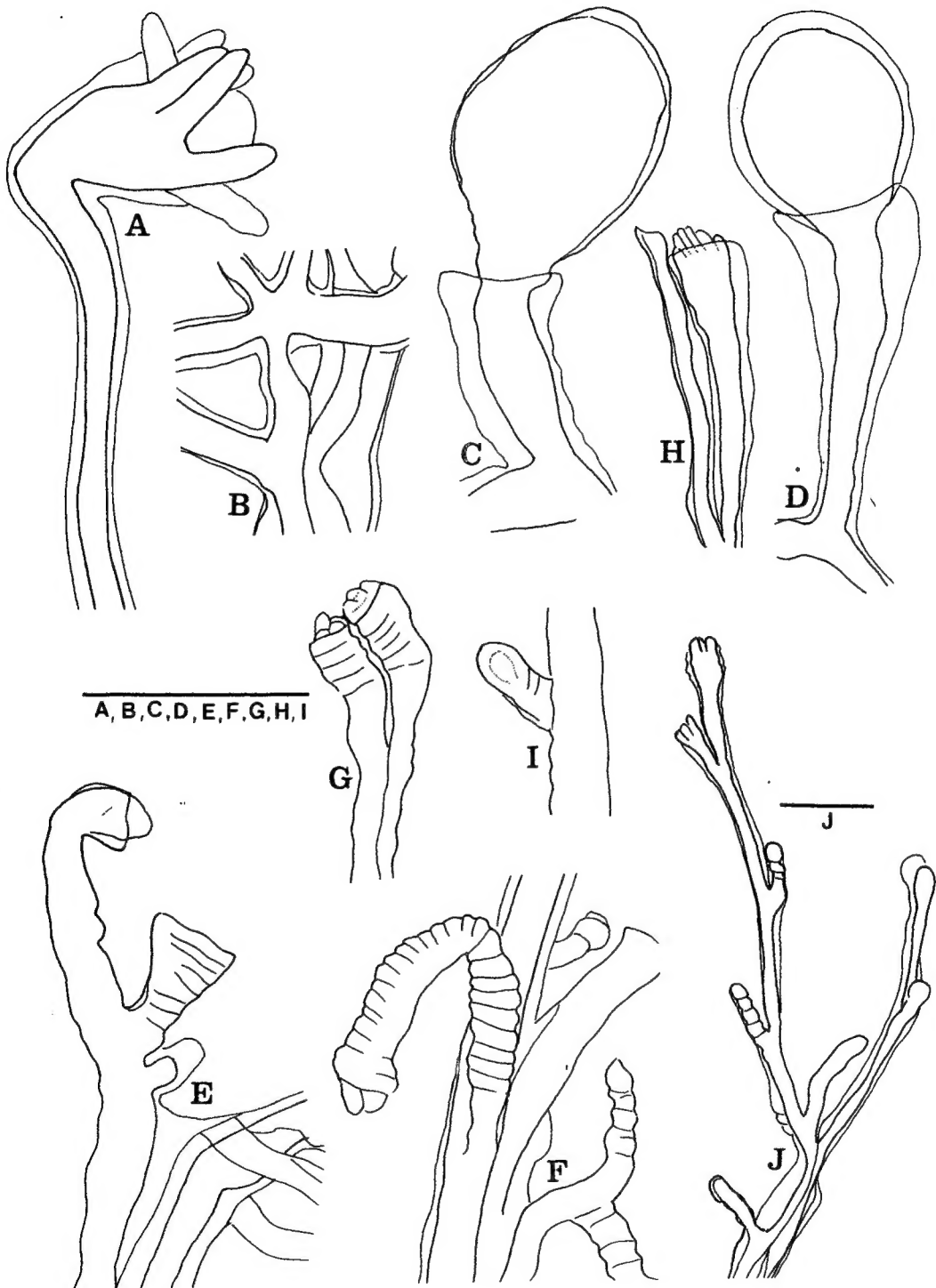
*Bougainvillia benedeni* Bonnevie, 1898, p. 484, pl. 26, figs. 34-35.

*Bougainvillia vanbenedeni*: Stechow, 1919, p. 25.

**Material examined.** Jumunjin, 18 Jul. 1997, J. H. Park; Sokcho harbour, 19 Jul. 1997, J. H. Park.

**Description.** Colony relatively large, reached 50 mm high and much branched profusely or irregularly. Stem and branch polysiphonic or monosiphonic. Periderm undistinct, smooth or undulating, or annulated partially or throughout, and expanding to base of tentacles forming pseudohydrotheca. Hydranth with a whole of 6-8 filiform tentacles. Medusa buds arising from stem and branch, oval-shaped and with short pedicel.

**Remarks.** According to Millard (1975) *B. ramosa* is variable in its growth form. One is short,



**Fig. 1.** A-D, *Bimeria annualata*. A, hydranth; B, hydrorhiza; C, D, gonophores. E-J, *Bougaivillia ramosa*. E, F, polysiphonic stems with pseudohydrothecae and annulated branches; G-H, hydranth; I, gonophore; J, part of colony. Scale bars = 0.4 mm (A-J).

reaching 15 mm long, unfascicled and little branched. The other is tall, as our specimens, reaching 50 mm, fascicled and much branched.

**Distribution.** Korea, Japan (Sagami Bay), North Sea, North Atlantic, South Atlantic, Europe, Mediterranean, Australia, South Africa, Indonesia.

Family Eudendriidae 꽃히드라과

**3. *Eudendrium boreale* Yamada, 1954 북방산꽃히드라 (신칭) (Fig. 2A-E)**

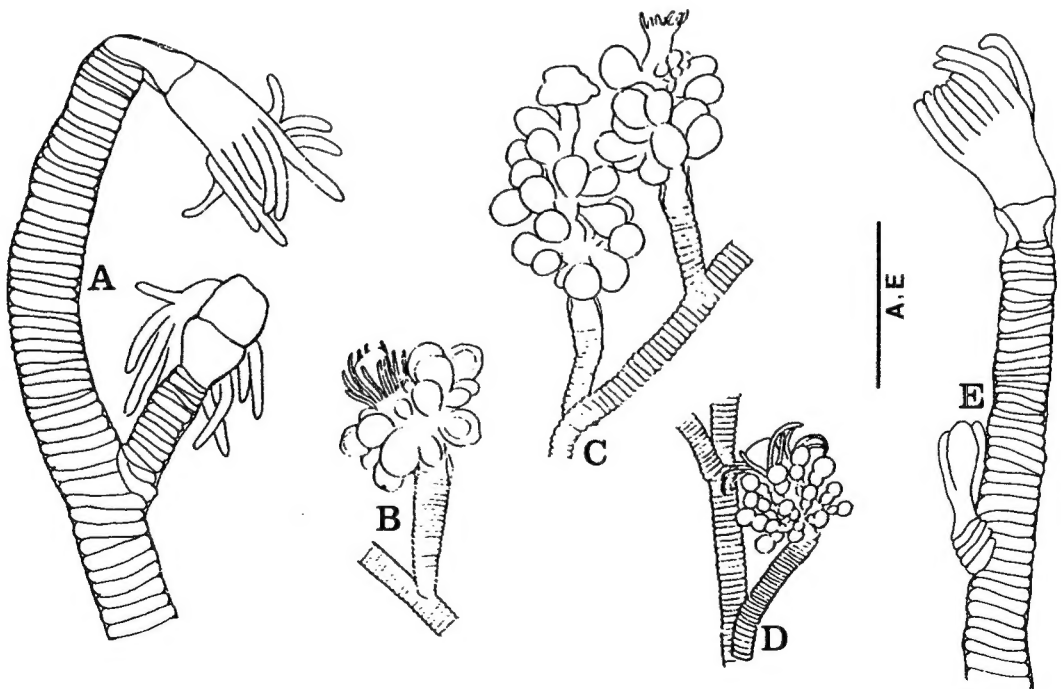
*Eudendrium boreale* Yamada, 1954, p. 3, fig. 2a-f.

**Material examined.** Sokcho harbour, 20 Jul. 1997, J. H. Park.

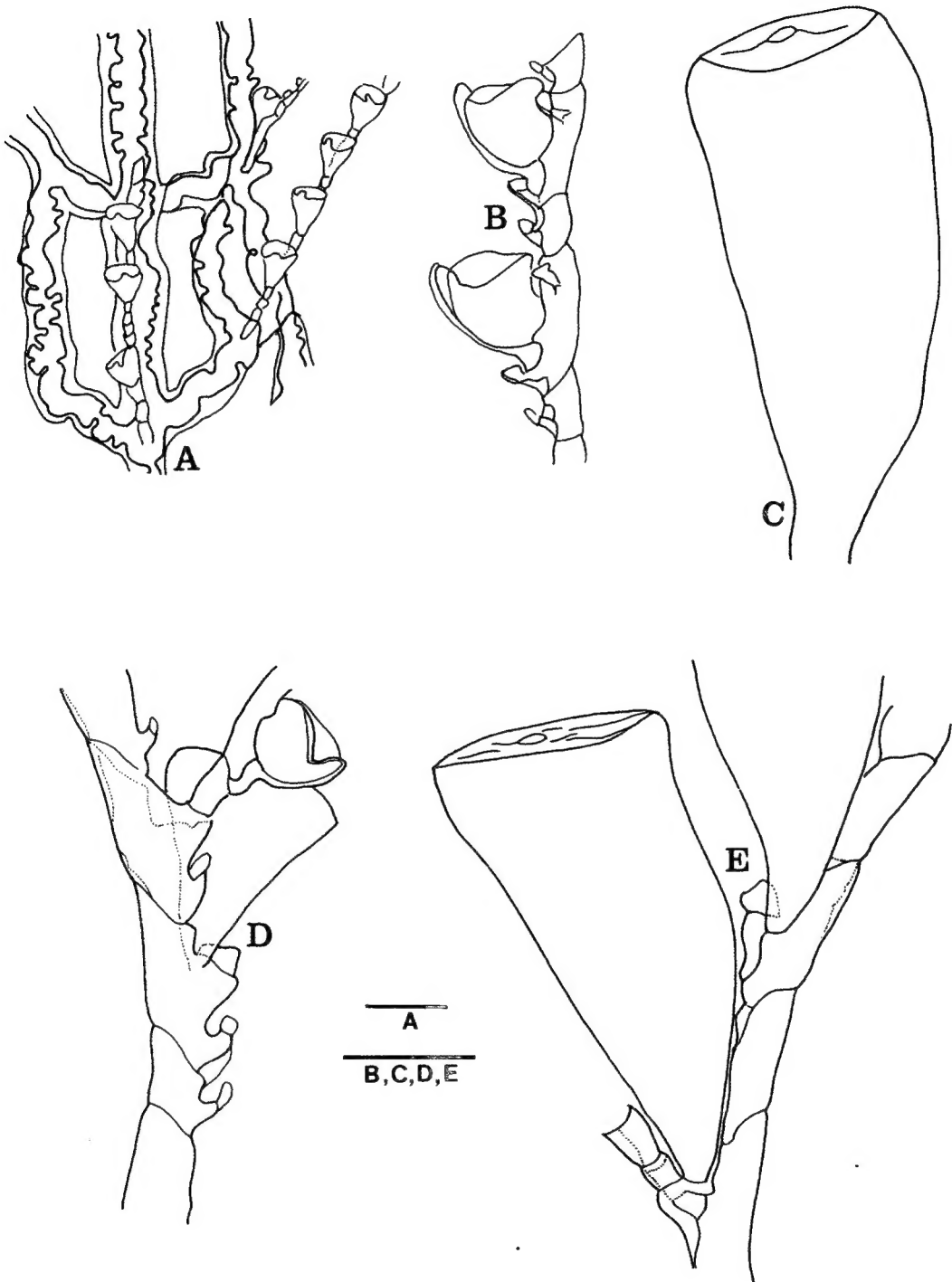
**Description.** Colony relatively large, reached 8–10 cm, and hydrorhiza forming small mass with twisted stolons. Stem monosiphonic but polysiphonic at basal portion and irregularly branched one or two times more and then forming branchlet bundle at apical portion. Stem and branch not in one plane, distinctly, regularly and very closely annulated throughout. Periderm expanded to base of hydranth, forming small cup. Hydranth with about 20 filiform tentacles. No gonophores examined.

**Remarks.** According to Yamada (1954) male gonophores (Fig. 2D) two-chambered in a whole on the base of the hydranth that is not aborted. Female gonophores (Fig. 2B–C) oval, in dense clusters around the body of hydranth which are usually not aborted.

**Distribution.** Korea, Japan (Hokkaido).



**Fig. 2.** A–D, *Eudendrium boreale*. A, E, annulated stems and branches with hydranths; B–C, female gonophores (from Yamada, 1954); D, male gonophore (from Yamada, 1954). Scale bars = 0.1 mm (A, E).



**Fig. 3.** *Plumularia undulata*. A, hydrorhiza with thick periderm and internal projections; B, a part of hydrocladium with hydrothecae; C, E, large gonothecae arising from hydrocaulis; D, hydrocaulis with hydrocladium and nematothecae. Scale bars = 0.3 mm (B-E), 0.5 mm (A).

Order Thecatae 컵히드라충목

Family Plumulariidae 깃히드라과

#### 4. *Plumularia undulata* Yamada, 1950 파도깃히드라 (신칭) (Fig. 3A-E)

*Plumularia undulata* Yamada, 1950, p. 17, pl. 1, figs. 24-26; Yamada, 1958, p. 80.

**Material examined.** Sokcho harbour. 28 Jun. 1989, J. H. Park; Jukbyon, 21 Jul. 1997, J. H. Park.

**Description.** Colonies small, about 1-2 cm long, simple or pinnate, and arising from hydrorhiza creeping on seaweeds. Hydrorhiza flattened, with very thick periderm and internal projections. Stem monosiphonic, divided into regular internodes, each internode bearing a hydrocladial apophysis: 3 cauline nematothecae, one placed in anterior of its base and one pair in base of hydrocladium. Apophyses arranged in right and left sides alternately, not in one plane, placed toward anterior surface. Hydrocladia usually unbranched, but rarely branched, divided into regular internodes, consists of short nematothecate internodes in 0.10-0.11 mm long and long thecate internodes in 0.21-0.23 mm long. Nematothecate internode with one median nematotheca and thecate internode with one hydrotheca and 3 nematothecae: one median inferior, one pair laterals. Nematotheca small, trumpet-shaped, two chambered and immovable. Hydrothecae bowl-shaped, with large aperture, margin undulated and one tongue-like adcauline projection, total length in 0.10-0.12 mm, width of margin in 0.20-0.21 mm, and length of frontal process in 0.06-0.07 mm. Gonothea large compared to hydrotheca, obconical shaped, wall smooth, margin truncate or with a low and broad neck, total length in 0.42-1.20 mm, width of margin in 0.40-0.63 mm.

**Remarks.** *Plumularia undulata* resembles *P. filicaulis* in the large aperture of hydrotheca, thick periderm, and very large gonothea compared to hydrotheca. But it is distinguished from *P. filicaulis* in the position, shape and tongue-like adcauline projection of hydrotheca and the shape of gonothea.

**Distribution.** Korea, Japan (Hokkaido).

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## 요 약

1989년 6월부터 1997년 7월까지 우리 나라의 동해에서 채집한 히드라충류 가운데 4종, 고리마디히드라 [*Bimeria annulata* (Nutting, 1901)], 분지보우겐빌히드라 [*Bougainvillia ramosa* (van Beneden, 1844)], 북방산꽃히드라 [*Eudendrium boreale* Yamada, 1954] 그리고 파도깃히드라 [*Plumularia undulata* Yamada, 1950]가 한국미기록종으로 판명되어 재기재하고 보고한다. 이로서 지금까지 밝혀진 한국 해산 히드라충류는 2목, 18과의 134종 및 7아종이 된다.